

CLAIMS

1. (currently amended) A brazing strip or foil comprising:

- a first metallic layer;
- a second metallic layer; and

a core including one or both of titanium and zirconium sandwiched between said first and said second metallic layers, wherein said core has a metallic bond with said first and said second metallic layers formed by roll bonding said core with said layers,

wherein the metallic bond is that which is formed by roll-bonding in the absence of ~~without any intermediate heat treating treatment.~~

2. (currently amended) The brazing strip or foil of claim 1, wherein said first metallic layer is one of ~~commercially pure~~ copper and a copper alloy.

3. (currently amended) The brazing strip or foil of claim 2, wherein said second metallic layer is one of ~~commercially pure~~ copper and a copper alloy.

4. (currently amended) The brazing strip or foil of claim 1, wherein said first metallic layer is one of ~~commercially pure~~ nickel and a nickel alloy.

5. (currently amended) The brazing strip or foil of claim 4, wherein said second metallic layer is one of ~~commercially pure~~ nickel and a nickel alloy.

6. (currently amended) The brazing strip or foil of claim 1, wherein said first metallic layer is one of ~~commercially pure~~ copper and a copper alloy, and further wherein said second metallic layer is one of ~~commercially pure~~ nickel and a nickel alloy.

7. (currently amended) The brazing strip or foil of claim 1, wherein one of said first and said second metallic layers is ~~commercially pure~~ copper.

8. (currently amended) The brazing strip or foil of claim 7, wherein the other of said first and said second metallic layers is of ~~commercially pure~~ copper.

9. (original) The brazing strip or foil of claim 1, wherein the other of said first and said second metallic layers is one of nickel and a nickel alloy.

10. (currently amended) A ~~self-brazing composite~~ comprising the brazing strip or foil of claim 1, which is metallurgically bonded to an additional alloy strip to form a self-brazing material.

11. (currently amended) A brazing strip or foil comprising:

a first layer including one of ~~commercially pure~~ copper, a copper alloy, ~~commercially pure~~ nickel, and a nickel alloy;

a second layer including one of ~~commercially pure~~ copper, a copper alloy, ~~commercially pure~~ nickel, and a nickel alloy; and

a core including one or both of titanium and zirconium sandwiched between said first and said second layers, wherein said core has a metallic bond with said first and said second layers formed by roll bonding said core with said layers without any intermediate heat treating; and the metallic bond is that which is formed by roll-bonding in the absence of heat treatment.

12. (previously presented) A self-brazing composite comprising the brazing strip or foil of claim 11, further comprising an additional alloy strip roll bonded to one of said first or second layers to form a self-brazing material.

13. (original) The brazing strip or foil of claim 11 wherein a thickness of said strip or foil is reduced by cold rolling without any intermediate heat treating.

14. (currently amended) A strip or foil comprising:  
a first layer including one of ~~commercially pure~~ copper, a copper alloy, ~~commercially pure~~ nickel, and a nickel alloy;  
a second layer including one of ~~commercially pure~~ copper, a copper alloy, ~~commercially pure~~ nickel, and a nickel alloy; and  
a core including zirconium sandwiched between said first and said second layers, wherein said core has a metallic bond with said first and said second layers formed by roll bonding said core with said layers; and wherein the metallic bond is that which is formed by roll-bonding in the absence of heat treatment ~~-without any intermediate heat treating.~~

15. (previously presented) A self-brazing composite comprising the strip or foil of claim 14, further comprising an additional alloy strip roll bonded to one of said first or second layers to form a self-brazing material.

16. (previously presented) The brazing strip or foil of claim 11, wherein a thickness of said strip or foil is reduced by said-roll bonding without any intermediate heat treating.

17. (original) A seven layer brazing strip or foil comprising:

a core including one or both of titanium or zirconium sandwiched between a pair of strips or foils each as defined in claim 14, wherein said core has a metallic bond with one surface of each of said pair of strips or foils.

18. (original) The brazing strip or foil of claim 17, wherein said metallic bond of said core is formed by roll bonding without any intermediate heat treating.

19-29. (cancelled).

30. (currently amended) A brazing strip or foil comprising:

a first layer including one of copper and a copper alloy;  
a second layer including one of nickel and a nickel alloy;  
a third layer including one of nickel and a nickel alloy;  
a fourth layer including one of copper and a copper alloy;  
and a titanium layer of ~~one of commercially pure titanium~~  
and or of a titanium alloy with said first and said second

layers layered on one side of said titanium layer, and said third and said fourth layers layered on another side of said titanium layer, wherein said titanium layer has a metallic bond with at least one of said first, said second, said third, and said fourth layers, said metallic bond formed by roll bonding without intermediate heat treating.

31. (currently amended) A brazing strip or foil comprising:

a first layer including one of copper and a copper alloy;  
a second layer including one of nickel and a nickel alloy;  
a third layer including one of nickel and a nickel alloy;  
a fourth layer including one of copper and a copper alloy;  
and a titanium layer of titanium or of a titanium alloy  
with said first and said second layers layered on one side of  
said titanium layer, and said third and said fourth layers  
layered on another side of said titanium layer,

wherein said titanium layer has a metallic bond with at  
least one of said first, said second, said third, and said  
fourth layers, ~~The brazing strip or foil of claim 30, wherein~~  
said first layer and, said fourth layer are comprised of about  
0.030" thick ~~commercially pure copper~~ before rolling and further  
wherein said ~~s~~second layer and said third layer are comprised of  
about 0.030" thick ~~commercially pure nickel~~ strips before  
rolling.

32. (previously presented) The brazing strip or foil of claim 31, wherein said first layer is roll bonded to said second layer and then cold rolled to about 0.012" thick.

33. (currently amended) The brazing strip or foil of claim 30, wherein the weight percentage of the resulting brazing strip ~~or~~ or foil results in about a 15Cu-15Ni-70Ti alloy upon brazing.

34. (previously presented) A brazing strip or foil comprising:

a core including of one or both of titanium and zirconium;  
and

a covering layer of one of ~~commercially pure~~ copper, a copper alloy, ~~commercially pure~~ nickel, and a nickel alloy, said covering layer substantially covering said core, wherein said covering layer has a metallic bond with said core formed by roll bonding without heat treating.

35. (previously presented) The brazing strip or foil of claim 34 further comprising:

at least one additional covering layer of one of ~~commercially pure~~ copper, a copper alloy; ~~commercially pure~~ nickel, and a nickel alloy.

36. (original) The brazing strip or foil of claim 35, wherein said covering layer has a metallurgical bond with said additional covering layer formed by roll bonding without any intermediate heat treating.

37. (original) A brazing strip or foil comprising:

a first metallic layer;  
a second metallic layer;  
a third metallic layer;  
a fourth metallic layer;

a fifth metallic layer;  
a sixth metallic layer, and  
a core including one or both of titanium and zirconium,  
said first, second, and third layers layered on one side of said  
core, and said fourth, fifth, and sixth layers layered on  
another side of said core.

38. (currently amended) The brazing strip or foil of claim  
37, wherein at least one of said layers is of ~~commercially pure~~  
copper.

39. (original) The brazing strip or foil of claim 37,  
wherein one Or more of said first metallic layer, said second  
metallic layer, and said third metallic layer includes one or  
more of zirconium, copper, and nickel, and further wherein one  
or more of said fourth metallic layer, said fifth metallic  
layer, and said sixth metallic layer includes one or more of  
zirconium, copper, and nickel.

40. (original) The brazing strip or foil of claim 39,  
wherein said second metallic layer includes zirconium and la.  
sandwiched between said first metallic layer and said third  
metallic layer.

41. (previously presented) The brazing strip or foil of  
claim 40, wherein said second metallic layer has a metallic bond  
with both said first and said third metallic layers, said  
metallic bond formed by roll bonding said first, second, and  
third layers together without heat treating prior to assembly of  
the brazing strip or foil.

42. (currently amended) The brazing strip or foil claim 37, wherein said second and fifth metallic layers include zirconium, and wherein said first metallic layer is made from one metal selected from the group consisting of copper and nickel and said third metallic layer is made from the other metal selected from the group consisting of copper and nickel; and further wherein said fourth metallic layer is made from one metal selected from the group consisting of copper and nickel and said sixth metallic layer is made from the other metal selected from the group consisting of copper and nickel.

43. (original) The brazing strip or foil of claim 42, wherein said core has a metallic bond with said third and said fourth metallic layers formed by roll bonding without intermediate heat treating.

44. (currently amended) The brazing strip or foil of claim 43, wherein

said second metallic layer has a metallic bond with said first and third metallic layers and wherein

said fifth metallic layer has a metallic bond with said fourth and sixth metallic layers, wherein the metallic bond is that which is formed by roll-bonding in the absence of heat treatment, and further wherein

~~said metallic bonds are formed by roll bonding without intermediate heat treating.~~



45. (previously presented) A brazing strip or foil comprising:

a first layer including one or both of nickel and copper;

a second layer including one or both of titanium and zirconium;

a third layer including one or both of nickel and copper; a fourth layer including one or both of nickel and copper;

a fifth layer including one or both of titanium and zirconium; a sixth layer including one or both of nickel and copper, and

a core including one of titanium and zirconium, wherein said core is in a middle of said layers.

46. (previously presented) The brazing strip or foil of claim 45, wherein each of said layers has a metallic bond with any adjacent layer including said core, said metallic bond formed by roll bonding without intermediate heat treating.

47. (previously presented) The brazing strip or foil of claim 45, wherein the weight percentage of the resulting brazing strip or foil results in about a 20Cu-20Ni-20Zr-40Ti alloy upon brazing.

48. (previously presented) The brazing strip or foil of claim 45, wherein the weight percentage of the resulting brazing strip or foil results in about a 15Cu-10Ni-37Zr-38Ti alloy upon brazing.

49. (currently amended) A brazing strip or foil comprising:

- a first layer including one or both of nickel and copper;
- a second layer including zirconium;
- a third layer including one or both of nickel and copper;
- a fourth layer including one or both of nickel and copper;
- a fifth layer including zirconium;
- a sixth layer including one or both of nickel and copper,

and a core layer including titanium layered in the center of said strip or foil, wherein

said second layer has a metallic bond with both said first and said third layers, and wherein

said core layer has a metallic bond with both said third and said fourth layers, and further wherein

said fifth layer has a metallic bond with both said fourth and said sixth layers wherein the metallic bond is that which is formed by roll-bonding in the absence of without any intermediate heat treatment, and still further wherein

~~said metallic bonds are all formed by roll bonding without heat treating.~~

50. (currently amended) The brazing foil or strip of claim 49, wherein said first and sixth layers are of ~~commercially pure~~ copper.

51. (currently amended) The brazing strip or foil of claim 49, wherein the weight percentage of the resulting brazing strip or foil results in about a 20Cu-20Ni-20Zr-40Ti alloy upon brazing.

52. (previously presented) The brazing strip or foil of claim 49, wherein the weight percentage of the resulting brazing strip or foil results in about a 15Cu-10Ni-37Zr-38Ti alloy upon brazing.

53. (previously presented) A method of making a seven layer composite strip comprising the steps of:

providing a first strip including one or both of nickel and copper;

providing a second strip including one or both of zirconium and titanium;

providing a third strip including one or both of nickel or copper;

first roll bonding said first strip, said second strip and said third strip together to form a metallic bond between said first strip and said second strip and to form a metallic bond between said second strip and said third strip to form an outer composite strip;

providing a core including one or both of titanium and zirconium; and

second roll bonding said core with a layer of said outer composite strip on each side of said core to form a metallic bond between said core and each of said outer composite strips to thereby form a seven layer composite strip.

54. (currently amended) The method of claim 53, wherein said first roll bonding step is accomplished without applying any intermediate heat treating step to the second strip or the third strip.

55. (currently amended) The method of claim 54 wherein said second roll bonding step is also accomplished without applying any intermediate heat treating step to the core or each of the outer composite strips.